(19) Canadian Intellectual Property Office

An Agency of Industry Canada Office de la Propri,t, Intellectuelle du Canada

Un organisme

d'Industrie Canada

(11) CA 2 387 491

(13) A1

(40) 03.05.2001 (43) 03.05.2001

(12)

(21) 2 387 491 (22) 13.10.2000

B65D 21/06

(51) Int. Cl. 7: (85) 15.04.2002

(86) PCT/US00/28466

.....

(30)

09/425,565 US 22.10.1999

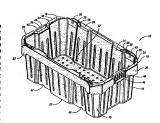
REHRIG PACIFIC COMPANY, 4010 East 26th Street, LOS ANGELES, XX (US). WO01/030661 (72)

KOEFELDA, GERALD R. (US). BELL, DONALD L. (US).

MACRAE & CO.

(54) CONTENEUR EMPILABLE ET EMBOITABLE (54) STACKABLE AND NESTABLE CONTAINER

A container (10) adapted to be oriented in a stacking or nesting configuration with a similar container includes a bottom panel (12), first and second pairs of opposed upstanding sidewalls (14, 16) extending around the periphery of the bottom panel (12) and formed integrally therewith. Also included is a member (18) which has an undulated portion (36). The member (18) is pivotably attached to the first pair of opposing sidewalls (14), extends between the first pair of opposing sidewalls (14), and is movable between a first position and a second position. When the container (10) is in the stacked orientation with the similar container, the member (18) is disposed in the first position which allows the member (18) to be received in a corresponding recess of the similar container thereabove. When the container (10) is in the nested orientation, the member (18) is disposed in the second position allowing the container to nestably receive the similar container.



Office de la Propriété intellectuelle du Canada

Office Un organisme d'Industrie Canada Industry Canada

Canadian Intellectual Property An agency of

CA 2387491 A1 2001/05/03 gn 2 387 491

(12) DEMANDE DE BREVET CANADIEN CANADIAN PATENT APPLICATION (13) A1

(86) Date de dépôt PCT/PCT Filing Date: 2000/10/13

(87) Date publication PCT/PCT Publication Date: 2001/05/03 (85) Entrée phase nationale/National Entry: 2002/04/15

(86) N° demande PCT/PCT Application No.: US 2000/028466 (87) N° publication PCT/PCT Publication No.: 2001/030661

(30) Priorité/Priority: 1999/10/22 (09/425.565) US

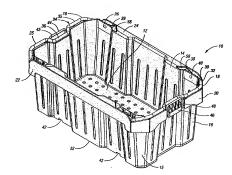
(51) CLInt.7/Int.Cl.7 B65D 21/06

(71) Demandeur/Applicant: REHRIG PACIFIC COMPANY, US

(72) Inventeurs/Inventors: KOEFELDA, GERALD R., US; BELL, DONALD L., US

(74) Agent: MACRAE & CO.

(54) Titre: CONTENEUR EMPILABLE ET EMBOITABLE (54) Title: STACKABLE AND NESTABLE CONTAINER



(57) Abrégé/Abstract:

A container (10) adapted to be oriented in a stacking or nesting configuration with a similar container includes a bottom panel (12), first and second pairs of opposed upstanding sidewalls (14, 16) extending around the periphery of the bottom panel (12) and formed integrally therewith. Also included is a member (18) which has an undulated portion (36). The member (18) is pivotably attached to the first pair of opposing sidewalls (14), extends between the first pair of opposing sidewalls (14), and is movable between a first position and a second position. When the container (10) is in the stacked orientation with the similar container, the member (18) is disposed in the first position which allows the member (18) to be received in a corresponding recess of the similar container thereabove. When the container (10) is in the nested orientation, the member (18) is disposed in the second position allowing the container to nestably receive the similar container.



http://opic.gc.ca · Ottawa-Hull K1A 0C9 · http://cipo.gc.ca OPIC - CIPO 191





(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



ALA SILATAN KETANTAKSA KALI ATAU SETINGA 1666 ALAK TANTAKSA KA

(43) International Publication Date 3 May 2001 (03.05.2001)

English

English

(10) International Publication Number WO 01/30661 A1

(51)	International Patent Classification7:	B65D 21/06		Agents: DIAMOND, Konstantine, J. et al.; Brooks & Kushman, 1000 Town Center, Twenty-Second Floor,
(21)	International Application Number: PC	T/US00/28466		Southfield, MI 48075 (US).
(22)	International Filing Date: 13 October 2000 (13.10.2000)		(81)	Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ,

22 October 1999 (22 10 1999) US

- : AE, AG, AL, AM, AT, AU, Z, CA, CH, CN, CR, CU, CZ. DE, DK, DM, DZ, EE, ES, FJ, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

(71) Applicant (for all designated States except US): REHRIG PACIFIC COMPANY [US/US]: 4010 East 26th Street. Los Angeles, CA 90023 (US).

(72) Inventors; and

(25) Filing Language:

(30) Priority Data:

09/425,565

(26) Publication Language:

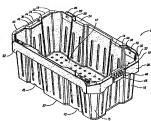
(75) Inventors/Applicants (for US only): KOEFELDA, Gerald, R. [US/US]; 1640 Hermosa Avenue, Hermosa Beach, CA 90254 (US). BELL, Donald, L. [US/US]; 7275 Franklin Avenue #211, Hollywood, CA 90046 (US).

Published:

With international search report.

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: STACKABLE AND NESTABLE CONTAINER



(57) Abstract: A container (10) adapted to be oriented in a stacking or nesting configuration with a similar container includes a bottom panel (12), first and second pairs of opposed upstanding sidewalls (14, 16) extending around the periphery of the bottom panel (12) and formed integrally therewith. Also included is a member (18) which has an undulated portion (36). The member (18) is pivotably attached to the first pair of opposing sidewalls (14), extends between the first pair of opposing sidewalls (14), and is movable between a first position and a second position. When the container (10) is in the stacked orientation with the similar container, the member (18) is disposed in the first position which allows the member (18) to be received in a corresponding recess of the similar container thereabove. When the container (10) is in the nested orientation, the member (18) is disposed in the second position allowing the container to nestably receive the similar container.

5

10

15

20

2.5

STACKABLE AND NESTABLE CONTAINER

TECHNICAL FIELD

This invention relates to containers which are capable of stacking and nesting with similar containers.

BACKGROUND ART

Containers which both stack and nest with similar containers are commonly used in industry for transporting and storing articles. Nesting is achieved when one container receives a like container therein such that there is some overlap between the walls of the containers. On the other hand, stacking is a term usually applied to occupied containers, such that there is relatively little or no overlap between similar containers.

There are various ways to achieve both stacking and nesting between similar containers. For example, the nestability and stackability of some containers may be dependent on their orientation relative to each other. A container of this rupe is illustrated in commonly owned U.S. Patent No. 5,881,902. As disclosed therein, a series of feet and corresponding pockets are provided, so that, depending on how the upper container is turned relative to the lower container, the containers may nest in one relative orientation and stack in another. Some containers typically require the articles in the lower container support the containers above it. Such is true for typical crates used to carry cans or bottles, such as that disclosed in U.S. Patent No. 5,855,277. Accordingly, this type of container is not particularly well-suited for the transport and storage of fragile articles, produce, vegetation, or baked goods, and similar articles, where the articles themselves cannot be used to support the weight of similar containers when in a stacking arrangement, for risk of damaging the articles.

WO 01/30661 PCT/US00/28466

Other containers may have a mechanism for adjusting the distance between the floors of containers which are nested or stacked. By adjusting the distance between the floors of nested or stacked containers, the containers can be selectively made to stack at different heights to thereby accommodate articles of different heights. The empty containers can also be nested to accommodate differently sized articles. Such a mechanism is disclosed in commonly owned U.S. Patent No. 5, 494, 163.

5

10

15

20

25

Containers used in the field to collect and store produce may also be placed into larger collection container, known as field bins, for transport. Field bins typically have a uniform construction, including rectangular walls having corners with added material on the inner corner forming an angle. Due to this extra material in the inner corners, most containers typically do not fit efficiently or uniformly into the field bins. In addition, present containers used with field bins are not typically capable of nesting, since such nesting capability for occupied containers could potentially cause damage to the fragile or perishable container contents. Containers used in the field for collecting produce and other perishable items are also subject to a great deal of handling, not only by such users in the field, but by those involved in every facet of the container and product handling.

Thus, there is a need for an improved container which is stackable and nestable with a similar container, and which has relatively greater strength characteristics when stacked with a similar container, as well as a more robust design which provides for greater support during the stacking and nesting with other containers. Such container should also provide for a relatively quick and easy way to change the container from the nesting stage to the stacking stage. Such containers should also be capable of being received into field bins, and should also be suitable for receiving fragile articles therein, such as produce, and should also seek to keep such articles from becoming damaged during stacking of containers.

10

15

20

25

DISCLOSURE OF INVENTION

Accordingly, it is a principal object according to the present invention to provide an improved container which stacks and nests with a similar container.

Another object according to the present invention is to provide a 5 nesting and stacking container which is adapted for use with field bins.

Yet another object according to the present invention is to provide a container which has a movable bail member to allow the container to change between a stacked orientation and a nested orientation with a similar container.

It is still another object according to the present invention to provide a container which has a movable member which provides lateral and overall stability to containers of the type when in a stacked orientation with each other.

In carrying out the above objects, features and advantages of the present invention, provided is a container adapted to be oriented in a stacking or nesting configuration with a similar container includes a bottom panel, first and second pairs of opposed upstanding sidewalls extending around the periphery of the bottom panel and formed integrally therewith. Each of the adjacent sidewalls may be attached by a non-perpendicular corner wall portion which extends therebetween, which is preferably chamfered. Also included is a member which is pivotably attached to one of the first pair and second pair of opposed sidewalls distal the corner wall portion. The member extends between the one of the first pair and second pair of opposed sidewalls and is movable between a first position and a second position. The member is rotatably movable about the sidewall of said container to which it is attached. In a preferred embodiment, the intermediate portion of the member is non-linear and includes an offset or undulating portion which projects toward an adjacent one of the second pairs of sidewalls, to provide for lateral stability and strength to the containers, particularly in a stacked orientation

WO 01/30661 PCT/US00/28466

When the container is in the stacked orientation with the similar container, the member is disposed in the first position which allows the member to be received in a corresponding recess of the similar container thereabove. When the container is in the nested orientation, the member is disposed in the second position allowing the container to nestably receive the similar container. The first pair of sidewalls has an inner wall portion and an outer wall portion defining a recess below the upper edge. The member has end portions mounted to the sidewalls below the upper edge of the container. The recess may include a first inclined portion corresponding to the corner wall portion, and a second inclined portion such that in the first position, the member rests substantially upon the second pair of opposing sidewalls and the end portions rest upon the first inclined portion. The member includes an intermediate portion having an offset portion directed towards an adjacent one of the second pair of opposed sidewalls.

5

10

15

20

25

In one embodiment, the container has a pair of handle portions each mounted to a corresponding one of the second pair of opposed sidewalls. The container may also include a second pair of handle portions each mounted to a corresponding one of the second pair of opposed sidewalls, the second pair of handle portions projecting above the upper edge of the container. Still further, the bottom panel has a lower surface which includes a recess formed therein for receiving the member of a similar container therebelow in a stacked orientation.

When the members are positioned in the first position, this allows the container to nestably receive a similar container. When the members are positioned in the second position, this allows the container to stackably support a similar container thereabove. More particularly, wherein when the containers are in the stacked position, the members are received in a recess of a similar container thereabove to provide a first stacked distance between the floors of the containers.

The above object and other objects, features and advantages of the present invention are readily apparent from the following detailed description of the best mode for carrying out the invention when taken in connection with the accompanying drawings.

BRIEF DESCRIPTION OF DRAWINGS

FIGURE 1a is a perspective view of a container according to the 5 present invention, where the movable members are in a first or down position (adaptable for a nested orientation):

FIGURE 1b is a another perspective view of the container, where the movable members are in a second or out position (adaptable for a stacked orientation);

FIGURE 2a is a top plan view of the container of Figure 1a;

10

15

20

FIGURE 2b is a top plan view of the container of Figure 1b;

FIGURE 3a is side elevational view of the container of Figure 1a;

FIGURE 3b is side elevational view of the container of Figure 1b;

FIGURE 4a is an end elevational view of the container of Figure 1a;

FIGURE 4b is an end elevational view of the container of Figure 1b;

FIGURE 5a is a perspective view of the container of Figure 1a, shown nested together with a similar container, where the movable members are in a first or down position (nested orientation);

FIGURE 5b is a perspective view of the container of Figure 1b stacked with a similar container, where the movable members are in a second or out position (stacked orientation):

FIGURE 6a is a perspective cross-sectional view of the containers in a nested orientation as shown in Figure 5a;

FIGURE 6b is a perspective cross-sectional view of the containers in a stacked orientation as shown in Figure 5b:

5 FIGURE 7 is a bottom plan view of the container of Figures 1a and 1b;

FIGURE 8 is a schematic view of the container showing the movable member schematically in both the first position and the second position;

FIGURE 9 is an enlarged top view showing the connection of the movable member to the container, with the member in the first position;

FIGURE 10 is a perspective view showing the connection of Figure 9:

FIGURE 11 is an enlarged top view showing the connection of the movable member to the container, with the member in the second position;

FIGURE 12 is a perspective view showing the connection of Figure 11;

15

FIGURE 13 is an alternate perspective view showing the connection of Figure 11;

FIGURE 14 is a cross-sectional perspective view showing the member
20 of one container of the present invention in the second position (stacked orientation)
and engaging the recess in the bottom panel of a second container;

FIGURE 15 is an end elevational view showing the engagement of Figure 14;

FIGURE 16 is a side elevational view showing the engagement of Figure 14:

FIGURE 17 is a side elevational view similar to that of Figure 16, but 5 wherein the member of the lower container is shown without its corresponding container for illustrative purposes:

FIGURE 18 is an enlarged view of the underside of the second handle member of the container according to the present invention;

FIGURE 19 shows a top plan view of a field bin of the type known 10 in the art, with schematic illustrations of the container according to the present invention: and

FIGURE 20 is a side elevational view of the field bin of Figure 19.

BEST MODE FOR CARRYING OUT THE INVENTION

With reference to Figures 1 through 18 of the accompanying 15 drawings, illustrated therein are various views of a container 10 according to the present invention. Since many of the advantages of the present invention involve the nestability and stackability of container 10 with like containers, reference to nested and stacked containers will be made with non-prime and prime (') reference number designations. Particularly, non-prime reference numerals are used to refer to 20 container 10, and prime reference numerals will be used to refer to a similar container 10' which is nested and/or stacked with container 10. For example, in Figure 5a, container 10 is empty and is nested into similar container 10', while Figure 5b shows container 10 stacked onto similar container 10'. For ease of explanation, the features of the containers are referred to using the same reference 25 numerals distinguished by a prime if referring to a similar container nested/stacked therewith.

WO 01/30661 PCT/US00/28466

Moreover, Figures 1 through 6 each have two related drawings, one of which carries an "a" suffix (i.e. Figure 1a) which indicates that the figure is a view of container 10 in either a nested or nestable orientation and having members 18 in a first (down) position, as disclosed herein. The other drawing for each respective figure has a "b" suffix (i.e. Figure 1b) which indicates that the corresponding figure is a view of container 10 in a either a stacked or stackable orientation having members 18 in a second (out) position as disclosed herein. Generally, reference to a figure 1 through 6 without a suffix will be deemed to encompass both the "a" and "b" versions.

5

10

15

20

25

30

Container 10 is preferably formed of a plastic or polymeric material, such as injection molded high density polyethylene, but of course may be formed of any material having the desired strength and properties to achieve the goals according to the present invention. The present invention is directed to a nestable and stackable container which has structural features to facilitate stable nesting of empty containers and stacking of loaded containers. Although numerous uses are contemplated, the present invention is particularly advantageous for the collection, storage, and transport of fresh produce from the field, including but not limited to stone fruits, vegetables, tomatoes, etc., as well as other fragile articles where the articles themselves cannot be used to support the weight of similar containers when in a stacking arrangement, for risk of damaging the articles.

Figure 1a illustrates individual container 10 in an orientation adaptable to nesting, where members 18 are in the first (down) position. Figure 1b illustrates individual container 10 in an orientation adaptable to stacking, where members 18 are in the second (out) position. With further reference to Figures 5 and 6, Figures 5a and 6a illustrate container 10 in a nested orientation with similar container 10'. Figures 5b and 6b illustrate container 10 in a stacked orientation with similar container 10'. Figures 2a, 3a, and 4a illustrate, respectively, the top plan view, side elevational view, and end elevational view of container 10 having the nestable orientation of Figure 1, while Figures 2b, 3b, and 4b illustrate the corresponding views for the stackable orientation of container 10 in Figure 1b.

Referring again to Figure 1a, illustrated therein is a perspective view of container 10 in a nestable orientation. Container 10 has a bottom panel 12 or base, a first pair of upstanding opposing side walls 14 integrally formed with the bottom panel 12, and a second pair of opposing sidewalls 16 (also referred to as end walls 16) which are also preferably integrally formed with both bottom panel 12 and the first pair of upstanding opposing side walls 14. While container 10 is shown as being generally rectangular in shape, it is fully contemplated that container may have any shape feasible to achieve the goals and objects according to the present invention.

5

10

15

20

25

30

As illustrated in Figure 7, bottom panel 12 includes first and second pair of opposed edges, 52 and 54, corresponding to the first and second pairs of opposed sidewalls, respectively. Opposing side walls and end walls 14, 16 may have a different shape or contour than the design illustrated and still be in accord with the teachings of the present invention. In a preferred embodiment, sidewalls 14,16 are also tapered vertically for enhancing nestability between similar containers 10 and 10'. In the nested configuration, as best seen in the cross-sectional view of Figure 6a, the distance between floors 12 and 12' of adjacent containers 10, 10' is kept at a minimum to make the most efficient use of storage space for empty containers.

As shown generally in Figures 1a, 1b, 2a, 2b, etc., in another preferred embodiment, adjacent side walls 14 and end walls 16 do not meet to form right-angles, but instead have disposed between each adjacent pair of walls 14, 16 a corner wall portion 15 which is not perpendicular to the adjacent sidewalls. Corner wall portions 15 are shown with chamfered or angled surfaces in the range of approximately 30° to 60°, and are preferably oriented at approximately 45°.

Corner wall portions 15 are particularly adapted to be received efficiently and securely within a field bin 70 having correspondingly shaped inner corners 72. A top plan view of a field bin having containers 10 schematically illustrated therein is shown for reference in Figure 19. Figure 20 is a side elevational view of field bin 70. Of course, in keeping with the teachings according to the present invention, it is also contemplated that as an alternative to a chamfer, corner wall portion 15 but may instead have a relatively large radius or rounded

PCT/US00/28466

5

10

15

20

25

30

transitional edges with the corresponding side walls and end walls, or have other design features which are non-perpendicular corners to achieve the goals and objects set forth herein. Such alternate corner designs include members 18 which are mounted to the container at a location spaced from and distal the traditional corner line, as defined herein.

Referring to Figure 5b, illustrated is container 10 in a stacked orientation with a similar container 10' wherein the distance between the floors 12, 12' of adjacent containers is relatively large in comparison to that of the nested orientation, in order to allow sufficient space for articles stored in containers 10, 10'. This relatively greater distance between floors 12 and 12' in the stacked orientation is best illustrated in the cross-sectional view of Figure 6b. As shown in Figures 5b and 6b, in the stacked orientation, adjacent containers 10 and 10' are stacked relative to one another with little or no overlap of the respective sidewalls 14 and 14', and 16 and 16'.

In further keeping with the teachings according to the present invention and with reference to Figures 1-6 and 8-17, container 10 includes at least one, and preferably a pair of movable members 18 (also referred to in the art as a bail or bail arm) which are movable between a first (or down) position shown in Figures 1a, 5a, and 6a to achieve the nesting orientation illustrated, and a second (or out) position shown in Figures 1b, 5b, and 6b, to achieve the stacking orientation illustrated. Particularly, it is upon movable members 18 that container 10 is supported onto subjacent container 10' during the stacked orientation. Of course the amount of overlay, and thus the stacking distance of the stacked configuration, can be varied to suit the needs of the user by adjusting the sizes of the component parts, and that shown in Figure 6b is provided for illustration.

Container 10 also includes a rim portion 20 which defines the opening to container 10. Rim 20 has an outer surface 22. Rim portion 20 also includes an upper edge 24 disposed substantially along side walls 14 of container 10, as well as at least partially on end walls 16. At or near the corner walls 25 of container 10, upper edge 24 of rim 20 transitions into a recess area 25 or channel for attachment

5

10

15

20

25

of support member 18, as discussed below. For ease of reference, rim 20 and sidewalls 14, 16 may together be referred to as a double wall thickness or as inner and outer wall portions.

As shown in Figures 1a, 1b, 2a and 2b, member 18 is described in detail herein and it is understood that the opposing member 18 is identical. For ease of discussion and not limitation, member 18 is generally symmetrical and includes various segments, including end portions 30 (having pintle 31), corner portions 32, and an intermediate portion 34. Intermediate portion 34 preferably includes outer intermediate portion 35 which are preferably linear portions, and a central intermediate portion 36 which is preferably includes an undulation or an offset portion. The undulation of central intermediate portion 36 is preferably directed outboard or toward the adjacent end wall 16 of container 10.

Moreover, while offset portion 36 is shown as preferably being centrally disposed along the length of member 18 and having a trapezoidal shape, it is fully contemplated according to the teachings of the present invention that offset portion 36 may have any shape or location necessary to achieve the goals of the invention. By example and not limitation, offset portion 36 may be rectangular or may be arcuate, and also need not be centrally located, but may instead be spaced apart from the centerline along intermediate portion 34. In such a design, there may be a pair of offset portions 36 symmetrical about the centerline. End portions 30 (and particularly pintles 31) of support member 18 are inserted into openings 40 of upper sidewalls 14 and retained there by an interference fit. Each movable member 18 is pivotable about openings 40.

Member 18 may be formed from metal or plastic material, such as rod or tubing having the desired cross-section, contour, and shape, and is preferably formed of galvanized metal. For example, support member 18 illustrated in the drawings is formed of generally cylindrical stock material. Member 18 is generally symmetrical about the longitudinal centerline of container 10.

As illustrated in Figures 1 and 3, each movable member 18 is pivotably mounted to and attached to upper portion 26 of side walls 14. Each member 18 also extends between the pair of opposing side walls 14 and is rotatable therearound. In the embodiment illustrated, the end portions 30 (or the pintles 31 thereof) of support member 18 engage side wall 14 and are received within an corresponding opening 40 in side wall 14 by an interference fit. More particularly, in the embodiment illustrated, end portions 30 of support members 18 are mounted to side wall 14 in recess area 25 of rim portion 20, below the plane of rim upper edge 24. Even more particularly, the attachment of support members 18 is in recess 25 between rim 20 and side wall upper portion 26. As shown in Figures 2a, 2b and the enlarged views of Figures 9, 10, 11, 12 and 13, recess 25 includes a flat portion 37 and a pair of ledges 38 and 39 (inboard and outboard, respectively) which are shown in the Figures as inclined portions.

Most prior art containers which may include bails typically have corners defined by walls which form approximately right-angles, where the bails are attached at the corners or proximate relative to the corners. In such cases, bails in their extended positions extend inward a short distance relative the entire length of the sidewall around which the bail rotates. However, in accordance with a preferred embodiment of the present invention, container 10 has chamfered corner walls 15 and therefore end portions 30 (pintles 31) of members 18 can not mount directly at or proximate the corner as in the prior art. Thus, in order to provide strength and support to members 18, they are mounted relatively inward from and distal their adjacent corner walls 15, or more particularly distal from the line (a traditional corner line) formed by the plane of end wall 16 and the adjacent corresponding plane of side wall 14. Accordingly, intermediate portion 34 of member 18 when in the second (out) position for stacking purposes also extends relatively farther inward than in prior art containers. Of course, the positioning of members 18 depends on many factors, including but not limited to the size of container 10, the length of side walls 14 and end walls 16, and the size and angle of corner wall portions 15.

30

25

5

10

15

20

Intermediate portion 34 of member 18 may be linear as in the prior art. However, in a preferred embodiment, an offset or undulation 36 is formed in

PCT/US00/28466

5

10

15

20

25

intermediate member 34. Relative to outer intermediate portions 35, offset 36 is directed outwardly toward end walls 16. Such configuration of member 18 serves to provide greater lateral stability and overall stability to member 18 during a stacked orientation of containers 10 and 10', by directing the strength outboard and to accommodate any potential strength dissipation from member 18 being mounted relatively inward from and distal the corner.

Moreover, while offset portion 36 is directed outward, the remainder of intermediate portion 34 (such as portions 35) continues to be disposed relatively inward, such that, for container 10 which is in a stacked configuration and resting upon members 18' of a similar container 10' (as in Figures 5b and 6b), the longitudinal span of bottom panel 12 extending between pairs of members 18' is relatively reduced, thereby limiting or reducing any potential sag of bottom panel 12.

To achieve the nested configuration illustrated in Figures 1a, 5a, and 6a, members 18' of lower container 10' are oriented in their first (down) position so that they are disposed generally upon upper edge 24 of rim 20, and so that corner portions 32 of member 18 rests upon ledge 39. When bails 18' are in this first (down) orientation, container 10 can be nested with and received within similar container 10', such that the distance between bottom panels 12 and 12' is relatively small.

In order to achieve the stacked configuration illustrated in Figures 5b and 6b, members 18' of lower container 10' are rotated into the second (out) position so that end portions 30' of members 18' rest upon inboard ledges 38' in recess area 25' of sidewalls 24'. As shown generally in Figures 1a, 1b, and 2b, upper edge 24 of container 10 may also include a slight notch or indentation 58 upon which corner portions 32 (or the outer corner portion 32 which is transitional with end portion 30) of member 18 rest in order to provide support for member 18 upon structural edge 24 of rim 20. This orientation of members 18 keeps intermediate portion 34 of member 18 substantially horizontal, or otherwise generally parallel with bottom panel 12.

5

10

15

20

25

30

Intermediate portion 34 of members 18 is configured so that it is received within a corresponding groove or recess 42 formed in the bottom surface 31 of bottom panel 12. The detail and shape of corresponding groove 42 is best shown in the bottom plan view of Figure 7. Recess 42 extends continuously from sidewall 14 to opposed sidewall 14 (or bottom panel edges 52 to 54) for receiving intermediate portion 34. Thus, container 10' in this configuration stackably supports similar container 10 disposed thereabove. Compared to the nesting configuration, the stacked configuration provides a relatively large distance between adjacent bottom panels 12 and 12' for loading large articles, and if desired, a maximum possible distance for the given containers 10 and 10' may be obtained. Other views of the stacking engagement between member 18 and recess 42 are illustrated in the various views of Figures 14, 15, 16 and 17.

A relatively quick and easy rotation of members 18 provides for a quick conversion of the containers between the nested to stacked configurations. Movable members 18 provide for flexible and efficient use of nested and stacked containers. It should be apparent to one of ordinary skill in the art that a single group of containers may include both containers that are nested as well as those that are stacked. For example, a single column of containers may have both containers that nested and some stacked, as necessary. All that needs to be done is to move members 18 from the first position to the second position.

Container 10 also includes a first handle portion 44, as shown in Figures 1a, 2a, and 3a, which is centrally disposed in each end wall 16 of container 10. Like member 18, handle 44 may be formed from metal or plastic material, such as rod or tubing having the desired cross-section, contour, and shape. Handle portion 44 is preferably formed of galvanized metal, providing it with the desired strength and durability for various uses, and typically for the attachment of a harness or carrier commonly worn by workers in the field while collecting and handling produce. Handle 44 is shown as being formed of generally cylindrical bar stock.

As best shown in the top plan view of Figures 2a, 2b, handle 44 has sufficient clearance longitudinally from central offset portion 26 of member 18 to

provide for ease of gripping handle 44 during movement and transport of container 10. Likewise, as illustrated in Figure 4a, there is sufficient clearance below handle 44 to allow for insertion of a harness clip, user's bands and/or fingers, if so desired. As best shown in Figures 7 and 18, handle 44 is mounted to container 10 under rim 20 of end walls 16, and may be secured thereunder with one or more integral clips 64 or other mechanical fasteners known in the art for attaching objects like handle 44. As shown in Figure 4a, the gripping portion 45 of first handle member 44 extends generally above upper edge 24 of container.

As illustrated best in Figures 1a, 4a, 7 and 18, container 10 also includes a second handle portion 46 which is adapted to be gripped by a user's hands. Handle 46 is formed integrally with container 10 and is disposed below the gripping portion 45 of handle 44. As illustrated in Figure 1a, handle 46 includes an upper ribbed portion 48. Further, as illustrated in the bottom view of Figure 7, handle 46 includes a lower surface having an outer flat portion 50 and inner recessed openings 56 defined by upper ribbed portion 48 wherein a user may position his palm and fingers, respectively, when lifting and handling container 10 by second handle portions 46. The underside of handle 46 is best shown in the enlarged view of Figure 18.

10

15

20

25

30

While the preferred embodiment includes at least two members 18, a single member is contemplated to be within the scope of the invention such as a cantilever configuration connected to a single sidewall. The preferred embodiments include two member orientations – nested and stacked, but more or fewer configurations are contemplated to be within the scope of the invention by varying the shapes and sizes of members. In addition, the bottom panel 12 of container 10 described above are shown with a pattern of holes 60, as shown in Figures 2a and 7. It is also contemplated that the container 10 may include a second pair of members 18 which are mounted to and pivot around the second pair of opposed sidewalls 16. Such holes typically serve as vents and are particularly useful to promote ventilation and air circulation, especially when container 10 is holding items such as produce, and thus may be placed directly in hydrocoolers or forced air coolers. Of course, depending on the use and application, any suitable configuration

of bottom panel 12 is contemplated to be within the scope of the invention such as a lattice pattern or a solid bottom panel. Similarly, sidewalls 14, 16 are shown as having vertically elongated slots 62 but any suitable configuration is contemplated, as well as solid sidewalls.

While embodiments of the invention have been illustrated and described, it is not intended that these embodiments illustrate and describe all possible forms of the invention. Rather, the words used in the specification are words of description rather than limitation, and it is understood that various changes may be made without departing from the spirit and scope of the invention.

15

WHAT IS CLAIMED IS:

- A container comprising:
- a bottom panel;
- first and second pairs of opposed upstanding sidewalls extending

 around the periphery of the bottom panel and formed integrally therewith; and

 a member pivotably attached to at least one of the first and second pair

 of opposing sidewalls and extending therebetween, the member movable between a
 first and a second position, the member including an intermediate portion having an
 undulation formed therein, the undulation directed towards an adjacent other of the

 first and second pair of opposed sidewalls.
 - The container of claim 1 wherein the first pair of sidewalls having an inner wall portion and an outer wall portion defining a recess therebetween below the upper edge, the recess having a first inclined portion corresponding to the corner wall portion.
 - 3. The container of claim 2 wherein the member has end portions mounted to the sidewalls below the upper edge of the container, wherein in the first position, the end portions rest upon the first inclined portion, and wherein in the second position the end portions rests upon a second inclined portion of the recess.
- 4. The container of claim 2 wherein the member includes end 20 portions and an intermediate portion, such that in the first position the intermediate portion of the member rests substantially upon the second pair of opposing sidewalls and the end portions rest upon the first inclined portion, and wherein in the second position the end portions rest upon the second inclined portion.
- The container of claim 1 wherein each of the adjacent sidewalls
 are integrally attached by a non-perpendicular corner wall portion extending therebetween.

6. The container of claim 5 wherein the corner wall portion is chamfered

PCT/US00/28466

- 7. The container of claim 1 further comprising a pair of handle portions each mounted to an other of the first and second pair of opposed sidewalls.
- 8. The container of claim 7 further comprising a second pair of handle portions each mounted to the other of the first and second pair of opposed sidewalls.
 - 9. The container of claim 1 wherein the bottom panel has a lower surface which includes a recess formed therein for receiving the member of a similar container therebelow in a stacked orientation.

10

15

20

- 10. The container of claim 1, wherein the members are rotatably movable about the at least one of the first and second sidewalls.
- 11. The container of claim 1, wherein the members when placed in the first position allows the container to nestably receive a similar container and when the members are in the second position allows the container to stackably support a similar container thereabove.
- 12. The container of claim 11, wherein when the container and similar container are in the stacked position, the members are received in a recess of a similar container thereabove to provide a first stacked distance between the floors of the containers.
- 13. A container adapted to stack or nest with a similar container, the container comprising:
- a base having a pair of opposing side edges and lower surface with a recess formed therein extending between the pair of opposing side edges;

a first pair of opposed sidewalls corresponding to the pair of opposing

side edges of the base and formed integrally therewith, the first pair of opposed
sidewalls defining a first pair of sidewall planes generally parallel to each other;

a second pair of opposed sidewalls integrally formed with the base and attached to a respective one of the first pair of opposed sidewalls by a non-perpendicular corner wall portion, the second pair of opposed sidewalls defining a second pair of sidewall planes generally parallel to each other and perpendicular to the first pair of sidewall planes, wherein each intersecting one of the first pair of sidewall planes and second pair of sidewall planes defines a corner line; and

5

10

15

20

25

a member pivotably attached to the first pair of opposing sidewalls distal the corner line and extending between the first pair of opposing sidewalls, the member movable between an inboard position and an outboard position,

wherein when the container is in the stacked orientation with the similar container, the member is disposed in the inboard position allowing the member to be received in a corresponding recess of the similar container thereabove, and wherein when the container is in the nested orientation, the member is disposed in the outboard position allowing the container to nestably receive the similar container.

- 14. The container of claim 13 wherein the first position, the intermediate portion of the member rests substantially upon the second pair of opposing sidewalls and the end portions rest upon the first inclined portion, and wherein in the second position the end portions rest upon the second inclined portion
 - 15. The container of claim 13 wherein the intermediate portion of the member includes a portion directed outward towards an adjacent one of the second pair of opposing sidewalls.
 - 16. The container of claim 13 wherein the member has end portions mounted to the sidewalls below the upper edge of the container.

10

20

- 17. The container of claim 13 wherein the member includes an intermediate portion having an offset portion directed towards an adjacent one of the second pair of opposed sidewalls.
- 18. The container of claim 13 further comprising a pair of handle portions each mounted to a corresponding one of the second pair of opposed 5 sidewalls.
 - 19. The container of claim 18 further comprising a second pair of handle portions each mounted to a corresponding one of the second pair of opposed sidewalls, the second pair of handle portions projecting above the upper edge of the container.
 - 20. The container of claim 13 wherein the bottom panel has a lower surface which includes a recess formed therein for receiving the member of a similar container therebelow in a stacked orientation.
- 21. The container of claim 13 wherein the corner wall portion is 15 chamfered
 - 22. The container of claim 13, wherein said member is rotatably movable about a sidewall of said container.
 - 23. The container of claim 13, wherein the members when placed in the first position allows the container to nestably receive a similar container and when the members are in the second position allows the container to stackably support a similar container thereabove.
 - 24. The container of claim 23, wherein when the members are in the stacked position, the members are received in a recess of a similar container thereabove to provide a first stacked distance between the floors of the containers.

WO 01/30661 PCT/US00/28466

25. A container orientable in a nesting and stacking configuration with a similar container, the container comprising:

a bottom panel having a recess formed therein;

5

10

15

20

first and second pairs of opposed upstanding sidewalls extending around the periphery of the bottom panel and formed integrally therewith, each of the adjacent sidewalls attached by a non-perpendicular corner wall portion extending therebetween; and

a member pivotably attached to the first pair of opposing sidewalls distal the corner wall portion, the member having a non-linear intermediate portion extending between the first pair of opposing sidewalls, the member movable between a first position and a second position, the first position allowing the container to stackably support the similar container thereabove such that member is received in a corresponding bottom panel recess of the similar container, and the second position allowing the container to nestably receive the similar container thereabove.

- 26. The container of claim 25 wherein the first position, the intermediate portion of the member rests substantially upon the second pair of opposing sidewalls and the end portions rest upon the first inclined portion, and wherein in the second position the end portions rest upon the second inclined portion
- 27. The container of claim 25 wherein the intermediate portion of the member includes a portion directed outward towards an adjacent one of the second pair of opposing sidewalls.
 - 28. The container of claim 25 wherein the member has end portions mounted to the sidewalls below the upper edge of the container.
- 29. The container of claim 25 wherein the member includes an intermediate portion having an offset portion directed towards an adjacent one of the second pair of opposed sidewalls.

WO 01/30661 PCT/US00/28466

30. The container of claim 25 further comprising a pair of handle portions each mounted to a corresponding one of the second pair of opposed sidewalls.

- 31. The container of claim 30 further comprising a second pair of handle portions each mounted to a corresponding one of the second pair of opposed sidewalls, the second pair of handle portions projecting above the upper edge of the container.
 - 32. The container of claim 25 wherein the bottom panel has a lower surface which includes a recess formed therein for receiving the member of a similar container therebelow in a stacked orientation.
 - The container of claim 25 wherein the corner wall portion is chamfered.
 - 34. The container of claim 25, wherein said member is rotatably movable about the first pair of sidewalls.
- 15 35. The container of claim 25, wherein the members when placed in the first position allows the container to nestably receive a similar container and when the members are in the second position allows the container to stackably support a similar container thereabove.
- 36. The container of claim 25, wherein when the members are in the 20 stacked position, the members are received in a recess of a similar container thereabove to provide a first stacked distance between the floors of the containers.
 - 37. A container comprising:
 - a bottom panel;

10

25

first and second pairs of opposed upstanding sidewalls extending around the periphery of the bottom panel and mounted thereto, each of the adjacent

CA 02387491 2002-04-15

WO 01/30661 PCT/US00/28466

sidewalls attached by a non-perpendicular corner wall portion extending therebetween; and

a member pivotably attached to the first pair of opposing sidewalls distal the corner wall portion and extending between the first pair of opposing sidewalls, the member movable between a nestable position and a stackable position.

5

10

15

- 38. The container of claim 37 wherein the first pair of sidewalls having an inner wall portion and an outer wall portion defining a recess therebetween below the upper edge, the recess having a first inclined portion corresponding to the corner wall portion.
- 39. The container of claim 38 wherein the member has end portions mounted to the sidewalls below the upper edge of the container, wherein in the nestable position the end portions rest upon the first inclined portion, and wherein in the stackable position the end portions rests upon a second inclined portion of the recess.
- 40. The container of claim 38 wherein the member includes end portions and an intermediate portion, such that in the first position the intermediate portion of the member rests substantially upon the second pair of opposing sidewalls and the end portions rest upon the first inclined portion, and wherein in the second position the end portions rest upon the second inclined portion.
- The container of claim 37 wherein the corner wall portion is angled.
 - 42. The container of claim 37 further comprising a pair of handle portions each mounted to a corresponding one of the second pair of opposed sidewalls.

43. The container of claim 42 further comprising a second pair of handle portions each mounted to a corresponding one of the second pair of opposed sidewalls, the second pair of handle portions projecting above the upper edge of the container.

44. The container of claim 37 wherein the bottom panel has a lower surface which includes a recess formed therein for receiving the member of a similar container therebelow in a stacked orientation.

5

15

20

25

- 45. The container of claim 37 wherein the members are rotatably movable about a sidewall of said container.
- 10 46. The container of claim 37, wherein the members when placed in the nestable position allows the container to nestably receive a similar container and when the members are in the stackable position allows the container to stackably support a similar container thereabove.
 - 47. The container of claim 46, wherein when the container and similar container are in the stacked position, the members are received in a recess of a similar container thereabove to provide a first stacked distance between the floors of the containers.
 - 48. A container having a bottom panel, a pair of opposed side walls and a pair of opposed end walls extending upward from and attached to the bottom panel defining an open area having an upper edge, the container comprising:
 - a first handle member attached to each of one of the pair of opposed side walls and end walls and having a first handling portion; and
 - a second handle member integrally attached to each of the one of the pair of opposed side walls and end walls and having a second handling portion, such that the second handling portion of the second handle member is disposed below the first handling portion of the first handle member.

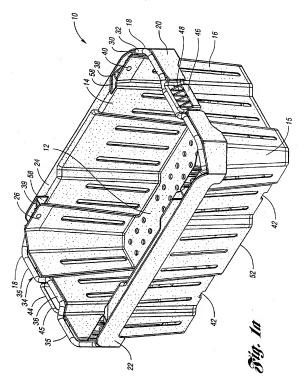
CA 02387491 2002-04-15

WO 01/30661

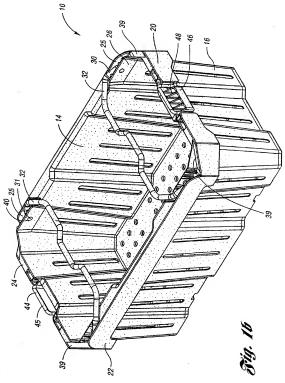
PCT/US00/28466

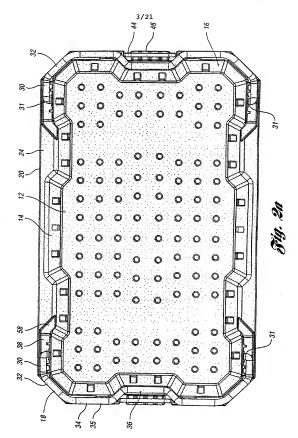
- 49. The container of claim 48 wherein the first handle member projects above the upper edge of the container.
- 50. The container of claim 48 further comprising a pair of movable members mounted to the pair of opposed side walls and pivotable between a first
 5 position and a second position.

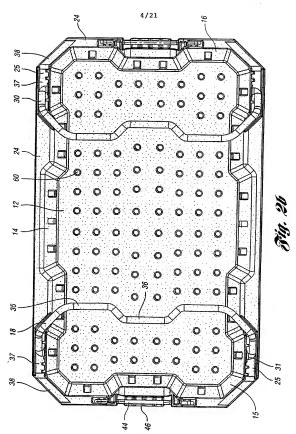
1/21

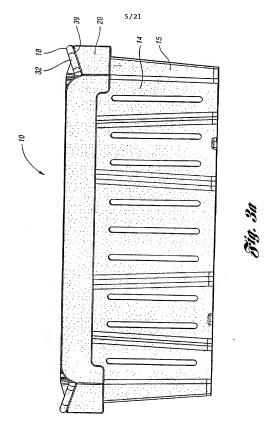


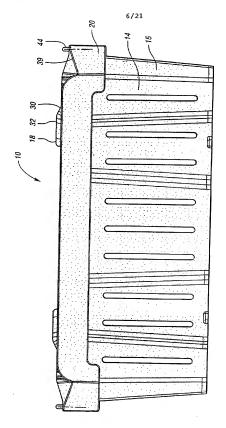
2/21





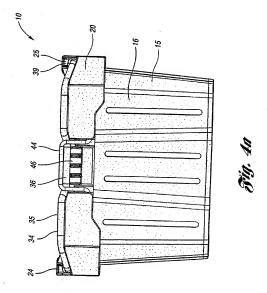




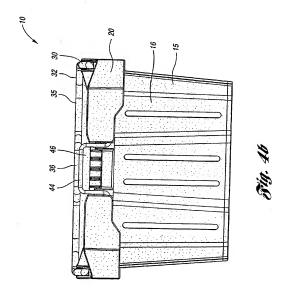


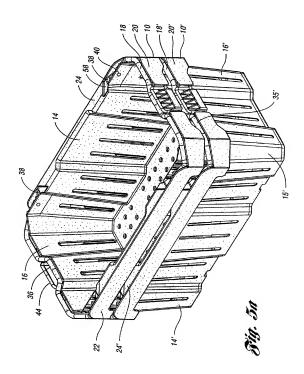
Pia. 36

7/21



8/21





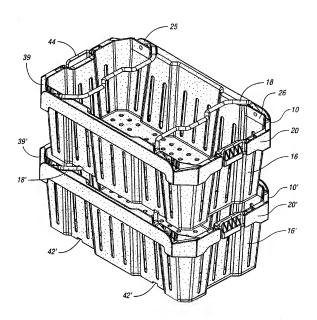
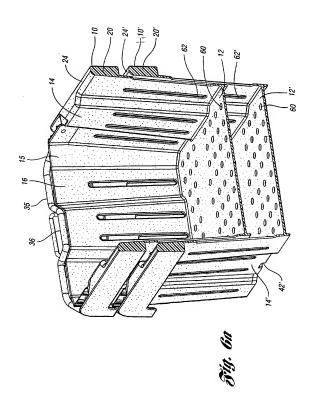


Fig. 56

11/21



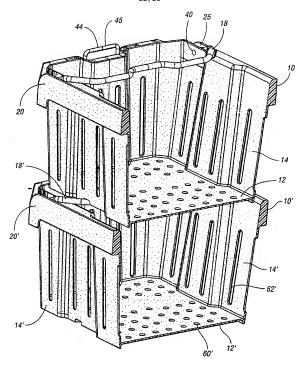
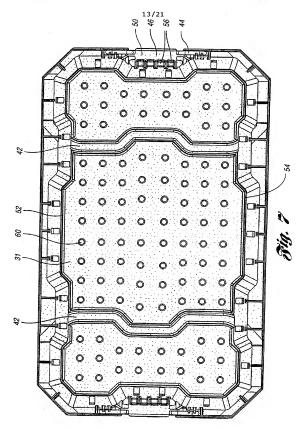
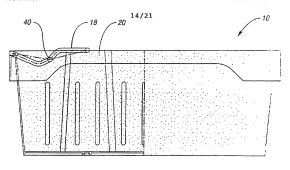


Fig. 66





31g. 8

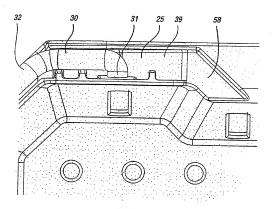


Fig. 9

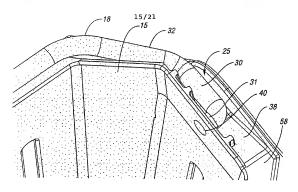
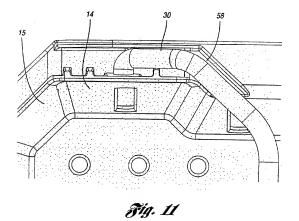
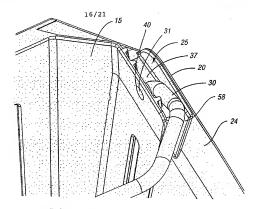


Fig. 10





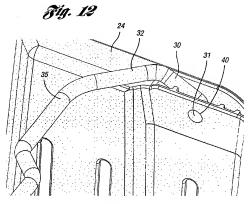


Fig. 13

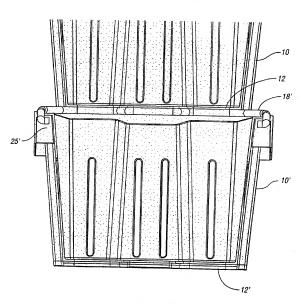
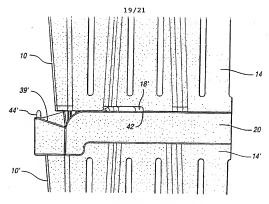
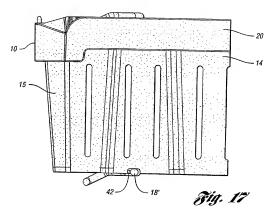
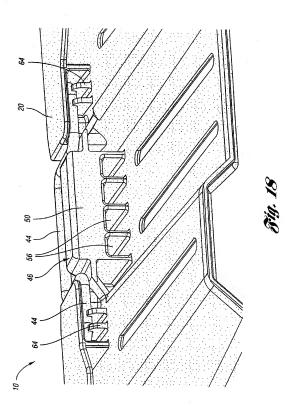


Fig. 15



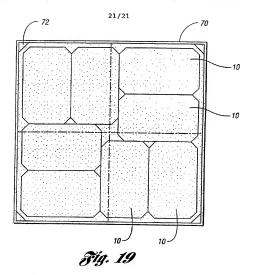






WO 01/30661

PCT/US00/28466



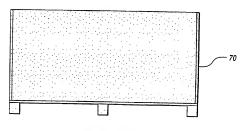


Fig. 20